IN THE CLAIMS

1. (currently amended) Apparatus for dispersing a fluent material comprising:

(a) an initial disperser for breaking a stream of fluent material into discontinuous parts so that said discontinuous parts are electrically isolated from a source of said fluent material; and

(b) an electron supply device ~~is~~ arranged so as to provide free electrons to said discontinuous parts after said discontinuous parts are formed by said initial disperser and thereby ~~that~~ impart a net charge on said discontinuous parts of fluent material so that said discontinuous parts of fluent material are dispersed at least partially under the influence of said net charge.

2. (currently amended) The apparatus of Claim 1, wherein said initial disperser comprises a ~~casing~~ body defining a conduit for carrying the stream of fluent material.

3. (currently amended) The apparatus of Claim 2, wherein the said ~~casing~~ body has surface profiling that is constructed and arranged in said conduit so as to disrupt said fluent material into the discontinuous parts.

4. (currently amended) The apparatus of Claim 3, wherein said ~~casing~~body defines an orifice and said conduit terminates at said orifice so that said discontinuous parts of fluent material are produced at said orifice.

5. (currently amended) The apparatus of Claim 4, wherein said electron supply device is aligned with said orifice on a central axis for said ~~casing~~body.

6. (currently amended) The ~~A~~apparatus of Claim 5, wherein said conduit has a cylindrical shape so as to project said fluent material in a stream around said central axis towards said orifice.

7. (original) The apparatus of Claim 5, wherein said electron supply device comprises an electron-permeable membrane having a first side facing said orifice and a second side facing oppositely from said first side, said electron supply device comprising an electron gun being arranged on said central axis to provide free electrons at said second side so that the electrons pass through said membrane to said first side and are directed at said discontinuous parts of fluent material at said orifice.

8. (currently amended) The apparatus of Claim 7, wherein said ~~casing~~body includes a chamber having a first end and a second end, said first end being open on said conduit at said orifice.

9. (original) The apparatus of Claim 8, further comprising a conductive grid disposed within said chamber adjacent said first side of said membrane and a power supply connected to said grid to apply an electrical potential to said grid for enhancing the penetration of said electrons to said orifice.

10. (original) The apparatus of Claim 5, wherein said electron supply device comprises an electron emitter arranged on said central axis and having a tip facing said orifice.

11. (original) Apparatus as claimed in Claim 10, wherein said emitter comprises a 1/2 millimeter diameter carbon steel needle.

12. (currently amended) The apparatus of Claim 10, wherein said ~~casing~~body includes a chamber having a first end and a second end, said first end being open on said conduit at said orifice, and said tip of said emitter being disposed in said chamber.

13. (original) The apparatus of Claim 8 or 12, further comprising a vacuum pump connected to said chamber for decreasing the pressure within said chamber.

14. (original) The apparatus of Claim 8 or 12, wherein said conduit directs said fluent material past said first end so that the pressure within said chamber is decreased.

15. (original) The apparatus of Claim 3, wherein said surface profiling comprises a plurality of elongated flutes that project into said conduit.

16. (original) Apparatus of Claim 15, wherein said conduit has a conical shape and said flutes are generally extended in a substantially parallel to the central axis.

17. (original) The apparatus of Claim 3, further comprising a source of fluent material.

18. (original) The apparatus of Claim 17, wherein said conduit has an inlet and said source of fluent material comprises a tank delivering fluent material to said inlet at a pressure of between about 5 and about 15 bar.

19. (currently amended) The apparatus of Claim 3, wherein said ~~casing~~body comprises a first cylindrical part having a first surface and a second cylindrical part with a second surface, said first cylindrical part being received in said second cylindrical part so that said first surface and said second surface cooperatively define said conduit.

20. (original) The apparatus of Claim 19, wherein said surface profiling is disposed on said first surface.

21. (original) Apparatus as claimed in Claim 8, further comprising a first power source connected to aid electron supply device, a conductive grid disposed adjacent said first side of said membrane, and a second power source connected to said grid.

22. (original) A method of dispersing a fluent material comprising the steps of:

providing a flow of droplets of fluent material; and

directing electrons at said droplets of said fluent material so as to provide a net charge on said fluent material

and disperse said fluent material under the influence of said net charge.

23. (currently amended) The ~~M~~method as claimed in Claim 22, wherein the step of providing a flow of droplets comprises atomizing a stream of said fluent material to form said droplets.

24. (currently amended) The ~~M~~method as claimed in Claim 22, wherein the step of atomizing said stream of fluent material comprises mechanically atomizing said stream of fluent material by delivering said stream of fluent material to an orifice under pressure.

25. (original) The method of Claim 22, wherein the step of providing a flow of droplets comprises passing a stream of fluent material over a first surface having profiling to disrupt said stream into discontinuous parts of fluent material and the step of directing electrons comprises directing electrons at said discontinuous parts of said fluent material.

26. (currently amended) The ~~M~~method of Claim 22, wherein said fluent material has an electrical resistivity of less than about 1 ohm-meter.

27. (currently amended) The ~~M~~method of Claim 25, wherein

a) the step of directing electrons includes providing free electrons at a second side of an electron-permeable membrane and manipulating said electrons into a beam of electrons so that the electrons pass through the membrane to a first side of said membrane and impinge on said discontinuous parts of fluent material, said discontinuous parts of fluent material being disposed on said first side of said membrane.

28. (currently amended) The ~~M~~method of Claim 25, wherein said step of passing a stream of fluent material includes directing said fluent material through a conduit, said conduit being defined by said first surface and a second surface having

an orifice defined therein, wherein said electrons are directed along an axis, said orifice being disposed on said axis.

29. (currently amended) The ~~M~~method of Claim 26, wherein said profiling is located adjacent said orifice and said stream is directed over said profiling and towards said orifice so that said stream breaks into said discontinuous parts at said orifice.

30. (currently amended) ~~A~~The method of Claim 25, wherein said fluent material is a liquid and said liquid is atomized at least partially under the influence of said net charge.

31. (currently amended) The ~~M~~method of Claim 30, wherein said fluent material comprises water.

32. (currently amended) The ~~M~~method of Claim 28, further comprising the step of introducing said stream of fluent material in a rotational flow around said axis, said first surface encircling said axis, to disrupt said stream of fluent material.

33. (original) The method of Claim 25, further comprising providing a low-pressure region having a sub-atmospheric pressure adjacent the stream of fluent material, said electrons being directed through said low-pressure region to said discontinuous parts.

34. (original) The method of claim 33, wherein the subatmospheric pressure comprises between about 10 and 80 kPa.

35. (original) The method of claim 25, wherein the charge imparted to the discontinuous parts comprises between about .1 and 3 coulombs per meter-cubed.

36. (currently amended) Apparatus for dispersing a fluent material comprising:

a) a ~~casing~~body defining a conduit for passing a stream of fluent material to an orifice defined by said ~~casing~~body, said orifice being disposed on a central axis; and

b) an electron supply device for providing free electrons so that the electrons impinge on the fluent material at said orifice to provide a net charge on the fluent material, the fluent material being dispersed at least partially under the influence of said net charge,

c) said ~~casing~~body having a chamber with an end adjacent said orifice, open ~~on~~to said conduit, and disposed on said central axis.

37. (currently amended) The ~~A~~apparatus of Claim 36, further comprising a source of fluent material and wherein said conduit has an inlet and said source of fluent material comprises a tank delivering fluent material to said inlet at a pressure of between about 5 to about 15 bar.

38. (currently amended) The ~~A~~apparatus of Claim 36, wherein a surface of said ~~casing~~body defining said conduit comprises surface profiling adjacent said orifice for disrupting said stream of fluent material.

39. (currently amended) The ~~A~~apparatus as claimed in Claim 36, wherein said chamber has a pressure of between about 1 kilopascal and 80 kilopascals.

40. (currently amended) The ~~A~~apparatus as claimed in Claim 36, wherein said electron supply device comprises an electrode having an emitter tip facing said orifice.

41. (currently amended) The ~~A~~apparatus as claimed in Claim 36, wherein said electron supply device comprises an electron gun.

42. (currently amended) The ~~A~~apparatus as claimed in Claim 36, wherein said chamber is defined by a surface of said ~~casing~~body, said surface comprising an insulating material.